

Complete Summary

GUIDELINE TITLE

Evidence based clinical practice guideline for children with acute gastroenteritis (AGE).

BIBLIOGRAPHIC SOURCE(S)

Cincinnati Children's Hospital Medical Center. Evidence based clinical practice guideline for children with acute gastroenteritis (AGE). Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2001 Apr. 13 p. [118 references]

COMPLETE SUMMARY CONTENT

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SCOPE

DISEASE/CONDITION(S)

Acute gastroenteritis

GUIDELINE CATEGORY

Evaluation
 Management

CLINICAL SPECIALTY

Emergency Medicine
 Family Practice
 Internal Medicine
 Pediatrics

INTENDED USERS

Advanced Practice Nurses
Dietitians
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To help practitioners at all levels of experience refine their knowledge and select among the options for evaluation and management of children with acute gastroenteritis based on the most current and best scientific information

TARGET POPULATION

Children aged 2 months to 5 years of age with signs and symptoms of acute gastroenteritis (diarrhea of recent onset not caused by chronic disease) with or without accompanying nausea, vomiting, fever, or abdominal pain.

These guidelines do NOT address all considerations needed to manage those with the following:

- "Toxic" appearance or requiring intensive care
- Episodes of diarrhea lasting longer than 7 days
- Previously diagnosed disorders including immunodeficiency or those affecting major organ systems
- Vomiting with no accompanying diarrhea
- Acute gastroenteritis accompanying failure to thrive
- Diarrhea and/or vomiting accompanied by metabolic disorders
- Diagnosis of hyponatremic or hypernatremic dehydration

INTERVENTIONS AND PRACTICES CONSIDERED

1. Intravenous (IV) therapy
2. Oral rehydration therapy solutions (ORS), such as Naturalyte, Pedialyte, Pediatric electrolyte (NutraMax), Infalyte, Rehydralyte, and WHO/UNICEF oral rehydration salts
3. Prompt refeeding of regular diet after rehydration
4. Antimicrobial therapy for selected children
5. Probiotics (Lactobacillus GG), as adjunctive therapy
6. Stool culture
7. Hospitalization
8. Reassessment of hydration status

Note: Anti-diarrheal agents and anti-emetics are considered but not recommended.

MAJOR OUTCOMES CONSIDERED

- The severity of dehydration
- The need for intravenous therapies and hospitalizations
- The duration of illness and length of hospitalization

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

118

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Evidence Based Grading Scale:

A: Randomized controlled trial: large sample

B: Randomized controlled trial: small sample

C: Prospective trial or large case series

D: Retrospective analysis

E: Expert opinion or consensus

F: Basic laboratory research

S: Review article

M: Meta-analysis

Q: Decision analysis

L: Legal requirement

O: Other evidence

X: No evidence

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

These recommendations were formulated by a working group including community and hospital based physicians, nurses, and pharmacists, who examined current local clinical practices and performed extensive and critical literature reviews using the evidence-based grading scale defined above and in the Major Recommendations field.

During formulation of the guidelines, the committee members remained cognizant of controversies and disagreements over the management of patients with hypertrophic pyloric stenosis. They tried to resolve controversial issues where possible and, when not possible, to offer optional approaches to care in the form of information that includes best supporting evidence of efficacy for alternative choices.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The recommendations contained in this document were formulated by a working group that included community and hospital based physicians, nurses, respiratory therapists, and others, who examined current local clinical practices and performed extensive and critical literature reviews.

During formulation of these guidelines, the committee members have remained cognizant of controversies and disagreements over the management of these patients. They have tried to resolve controversial issues where possible and, when not possible, to offer optional approaches to care in the form of information that includes best supporting evidence of efficacy for alternative choices.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guidelines have been reviewed and approved by senior management, Legal Services, the Institutional Review Board, the hospital's Pharmacy and Therapeutics, Clinical Practices, Executive, and other committees and other individuals as appropriate to their intended purposes.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The levels of evidence (A-F, S, M, Q, L, O, and X) are defined at the end of the "Major Recommendations" field.

Clinical Assessments

Diagnosing Dehydration (See Table 2 in original guideline document for physical parameters of dehydration)

1. Acute body weight changes provide the best measures of dehydration in a child (Duggan et al., 1996 [C]; Gorelick, Shaw, & Murphy, 1997 [C]).

Note 1: Mucous membrane hydration, capillary refill time (Saavedra et al., 1991 [D]), absence of tears, and alterations in mental status are the next best associated measures. The presence of any three or more of these latter four signs has a sensitivity of 87% and specificity of 82% for detecting a fluid deficit of 5% or more (Duggan et al., 1996 [C]; Gorelick, Shaw, & Murphy, 1997 [C]).

Laboratory Assessments

1. Tests for specific pathogens, including those for rotavirus, ova and parasites, and bacteria, are not recommended in managing routine cases of acute gastroenteritis (Local Expert Consensus [E]). However, serum electrolytes are sometimes useful in assessing children with moderate to severe dehydration and who require intravenous fluids.

Treatment Recommendations

Prevention of Dehydration

1. It is recommended that continued use of the child's preferred, usual, and age appropriate diet be encouraged to prevent or limit dehydration (Alarcon et al., 1992 [A]; Brown, Peerson, & Fontaine, 1994 [M]; Fayad et al., 1993 [A]; Cohen et al., 1995 [A]). Regular diets are generally more effective than restricted and progressive diets, and in numerous trials have consistently produced a reduction in the duration of diarrhea (Margolis et al., 1990 [B]; Alarcon et al., 1991 [A]; Placzek & Walker-Smith, 1984 [B]; Khin et al., 1985 [C]; Santosham et al., 1985 [A]; Molina et al., 1995 [A]).

Note 1: The historical BRAT diet (consisting of bananas, rice, applesauce, and toast) affords no advantage unless these foods are part of the child's usual diet (AAP, 1996 [S, E]).

Note 2: Clear liquids are not recommended as a substitute for oral rehydration solutions or regular diets in the prevention or therapy of dehydration (AAP, 1996 [S, E]) (See Table 3 in the original guideline document for a comparison chart of various oral rehydration solutions.)

Note 3: The vast majority of patients with acute gastroenteritis do not develop clinically important lactose intolerance. In selected patients with documented lactose intolerance, lactose free formulas are recommended (Sunshine, 1964 [O]; Fox et al., 1990 [B]).

2. If the child is vomiting, s/he may better tolerate very frequent small feedings (every 10 to 60 minutes) of any tolerated foods or oral rehydration solutions (Santosham et al., 1985 [A]; Wan et al., 1999 [A]).
3. A child with more severe vomiting but no signs of significant dehydration may be managed by frequent telephone follow-up or by direct supervision in the office, emergency department, or in a hospital setting (See Table 4 titled "Model of Form for Phone Triage for Child with AGE" in the original guideline document for triage suggestions).

Treatment of Dehydration

In addition to the recommendations above, the following may be considered:

4. It is recommended that dehydration be treated with oral rehydration solutions or intravenous therapy (if indicated) for a period of 4-6 hours until an adequate degree of rehydration is achieved (AAP, 1996 [S, E]; Walker-Smith et al., 1997 [S, E]; Placzek & Walker-Smith, 1984 [B]; Khin et al., 1985 [C]; Santosham et al., 1985 [A]; Hjelt et al., 1989 [B]; Gazala et al., 1988 [B]; Fox et al., 1990 [B]; Fayad et al., 1993 [A]; Molina et al., 1995 [A]).
5. Following rehydration therapy, in the treatment of mild to moderate dehydration, regular diets can be resumed and supplemented with oral rehydration solutions containing at least 45meq Na⁺/L, and targeted to deliver 10ml/kg for each stool or emesis (Gore, Fontaine, & Pierce, 1992 [M]; Fayad et al., 1993 [A]; Cohen et al., 1995 [A]). (See Table 3 in the original guideline document.)

Note 1: It is advisable to reassess hydration status when a child refuses oral rehydration solutions. Refusal may indicate an absence of salt-craving, and, as such, the absence of dehydration (Cohen et al., 1995 [A]).

6. In both the United States and abroad, oral rehydration solutions therapy followed by prompt refeeding of the usual diet has been used successfully (Santosham et al., 1982 [A]; Tamer et al., 1985 [C]; Listerick, Zieserl, & Davis, 1986 [B]; Gore, Fontaine, & Pierce, 1992 [M]; Fayad et al., 1993 [A]; Cohen et al., 1995 [A]; Gavin, Merrick, & Davidson, 1996 [M]; Holliday, 1996 [S, E]).
7. In children with moderate to severe dehydration who are alert and able to tolerate the solutions, oral rehydration solutions therapy has been

demonstrated to be an effective and proven alternative to intravenous rehydration (Cohen et al., 1995 [A]). When unable to replace the estimated fluid deficit and keep up with the ongoing losses using by mouth (PO) feedings alone, intravenous fluids are recommended. For severely dehydrated children with obtunded mental status, intravenous therapy is almost always the recommended treatment option.

Note 1: In emergency or inpatient settings, intravenous fluids are considered to be of equal efficacy to frequent offerings of oral rehydration solutions for rehydration. Therefore, intravenous rehydration can be recommended as a valid alternative to oral rehydration under some circumstances (Listernick, Zieserl, & Davis, 1986 [B]; MacKenzie & Barnes, 1991 [A]; Santosham et al., 1982 [A]; Vesikari, Isolauri, & Baer, 1987 [B]).

Note 2: When intravenous access is not available, nasogastric oral rehydration solution has been used successfully and may be considered for trial in selected patients in whom oral rehydration is not possible (MacKenzie & Barnes, 1991 [A]).

8. Refeeding of the usual diet is recommended at the earliest opportunity after an adequate degree of rehydration is achieved (Placzek & Walker-Smith, 1984 [B]; Khin et al., 1985 [C]; Santosham et al., 1985 [A]; Hjelt et al., 1989 [B]; Gazala et al., 1988 [B]; Fox et al., 1990 [B]; Fayad et al., 1993 [A]; Molina et al., 1995 [A]).

Special Information

1. Anti-diarrheal agents and antiemetics are not recommended for use in children with acute gastroenteritis (WHO, 1990 [S, E]; AAP, 1996 [S, E]).
2. Antimicrobial therapies are recommended only for selected children with acute gastroenteritis who present with special risks or evidence of a serious bacterial infection (SBI) (AAP, 1996 [S, E]) (See Table 5 of the original guideline document.)
3. Probiotics (Lactobacillus GG) have been shown to reduce the duration of diarrhea and the duration of shedding of rotavirus. Lactobacillus GG may be considered as adjunctive therapy (Guarino et al., 1997 [B]).

Inpatient Management Considerations

1. It is recommended that those patients who are treated in the hospital setting and who are appropriate for the Acute Gastroenteritis Guideline be placed as Short Stay patients with a discharge goal of 23 hours or less (Browne & Penna, 1996 [C]; McConnochie et al., 1999 [D]).
2. For children receiving care in a hospital setting, consider prompt discharge when the following levels of recovery are reached:
 - Sufficient rehydration achieved as indicated by weight gain
 - Intravenous fluids not required
 - Oral intake equals or exceeds losses
 - Adequate family teaching has occurred
 - Medical follow-up is available via telephone or office visit

Definitions:

Evidence Based Grading Scale:

A: Randomized controlled trial: large sample

B: Randomized controlled trial: small sample

C: Prospective trial or large case series

D: Retrospective analysis

E: Expert opinion or consensus

F: Basic laboratory research

S: Review article

M: Meta-analysis

Q: Decision analysis

L: Legal requirement

O: Other evidence

X: No evidence

CLINICAL ALGORITHM(S)

Two clinical algorithms are presented: (1) a decision tool for helping decide when to obtain stool cultures and when a child may benefit from antimicrobial therapies, and (2) a logical approach for the evaluation and care of a child with acute gastroenteritis.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

[References open in a new window](#)

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Prevention or limitation of the severity of dehydration

- Prevention of the need for intravenous therapies and hospitalizations
- Shortened duration of illness and length of hospitalization

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

These recommendations result from review of literature and practices current at the time of their formulations. This protocol does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. The guideline document is not intended to impose standards of care preventing selective variances from the guidelines to meet the specific and unique requirements of individual patients. Adherence to this pathway is voluntary. The physician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Chart Documentation/Checklists/Forms
Clinical Algorithm
Patient Resources

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Cincinnati Children's Hospital Medical Center. Evidence based clinical practice guideline for children with acute gastroenteritis (AGE). Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2001 Apr. 13 p. [118 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999 Nov (revised 2001 Apr)

GUIDELINE DEVELOPER(S)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

SOURCE(S) OF FUNDING

Cincinnati Children's Hospital Medical Center

GUIDELINE COMMITTEE

Clinical Effectiveness Committee for Gastroenteritis, 2000-2001

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline. It updates a previously issued version (Evidence based guidelines and recommendations for the community evaluation and medical management of children with acute gastroenteritis. Cincinnati [OH]: Cincinnati Children's Hospital Medical Center [CHMC]; 1999).

An update is not in progress at this time.

GUIDELINE AVAILABILITY

Electronic copies: Available from the [Cincinnati Children's Hospital Medical Center](#).

For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Children's Hospital Medical Center Health Policy and Clinical Effectiveness Department at HPCEInfo@chmcc.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Acute gastroenteritis clinical guideline admission orders. Cincinnati (OH): Children's Hospital Medical Center, 2001 Oct. 1 p.
- Acute gastroenteritis education record. Cincinnati (OH): Children's Hospital Medical Center, 2001 Oct. 2 p.
- Acute gastroenteritis discharge instructions. Cincinnati (OH): Children's Hospital Medical Center, 2001 Oct. 1 p.
- Acute gastroenteritis clinical guideline emergency department orders. Physician's order form. Cincinnati (OH): Children's Hospital Medical Center, 2001 Oct. 1 p.
- Acute gastroenteritis clinical pathway. Cincinnati (OH): Children's Hospital Medical Center, 2001. 2 p.

For information contact the Children's Hospital Medical Center Health Policy and Clinical Effectiveness Department at HPCEInfo@chmcc.org.

PATIENT RESOURCES

The following is available:

- Gastroenteritis. Cincinnati (OH): Cincinnati Children's Hospital Medical Center, 2002 Mar. 3 p.

Electronic copies: Available from the [Cincinnati Children's Hospital Medical Center Web site](#).

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC STATUS

This summary was completed by ECRI on September 1, 1998. The information was verified by the guideline developer on December 1, 1998. This summary was updated by ECRI on March 18, 2002, and reviewed by the guideline developer as of May 7, 2002.

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